

CLAIMS:

1. A nucleic acid comprising a nucleic acid sequence which encodes AccB polypeptide, or a nucleic acid sequence
5 complementary thereto,
wherein said AccB polypeptide has the amino acid sequence set out in Fig. 12A and/or the amino acid sequence encoded by the nucleic acid sequence set out in Fig. 12B.
- 10 2. The nucleic acid of claim 1, wherein said nucleic acid sequence is as set out in Fig. 12B, or is complementary thereto.
3. The nucleic acid of claim 1, further comprising a nucleic
15 acid sequence which encodes AccE polypeptide, or a nucleic acid sequence complementary thereto,
wherein said AccE polypeptide has the amino acid sequence set out in Fig. 13A and/or the amino acid sequence encoded by the nucleic acid sequence set out in Fig. 13B.
- 20 4. The nucleic acid of claim 3, wherein said nucleic acid sequence is as set out in Fig. 13B, or is complementary thereto.
- 25 5. The nucleic acid of claim 1, further comprising a nucleic acid sequence which encodes AccA1 polypeptide, or a nucleic acid sequence complementary thereto,
wherein said AccA1 polypeptide has the amino acid
sequence set out in Fig. 11A and/or the amino acid sequence
30 encoded by the nucleic acid sequence set out in Fig. 11B.

6. The nucleic acid of claim 5, wherein said nucleic acid sequence is as set out in Fig. 11B, or is complementary thereto.

5 7. The nucleic acid of claim 1, further comprising a nucleic acid sequence which encodes AccA2 polypeptide, or a nucleic acid sequence complementary thereto,

wherein said AccA2 polypeptide has the amino acid sequence set out in Fig. 11A and/or the amino acid sequence encoded by the nucleic acid sequence set out in Fig. 11B.

8. The nucleic acid of claim 7, wherein said nucleic acid sequence is as set out in Fig. 11B, or is complementary thereto.

15 9. The nucleic acid of claim 1 wherein said nucleic acid sequence which encodes AccB polypeptide is in operative association with a regulatory sequence for constitutive or inducible expression of said AccB polypeptide in *Streptomyces* species.

10. The nucleic acid of claim 9 wherein said regulatory sequence comprises the tipA inducible promoter.

25 11. The nucleic acid of claim 3 wherein said nucleic acid sequence which encodes AccE polypeptide is in operative association with a regulatory sequence for constitutive or inducible expression of said AccE polypeptide in *Streptomyces* species.

30 12. The nucleic acid of claim 11 wherein said regulatory sequence comprises the tipA inducible promoter.

13. The nucleic acid of claim 5 wherein said nucleic acid sequence which encodes AccA1 polypeptide is in operative association with a regulatory sequence for constitutive or inducible expression of said AccA1 polypeptide in *Streptomyces* species.

14. The nucleic acid of claim 13 wherein said regulatory sequence comprises the tipA inducible promoter.

15. The nucleic acid of claim 7 wherein said nucleic acid sequence which encodes AccA2 polypeptide is in operative association with a regulatory sequence for constitutive or inducible expression of said AccA2 polypeptide in *Streptomyces* species.

16. The nucleic acid of claim 15 wherein said regulatory sequence comprises the tipA inducible promoter.

17. A vector comprising the nucleic acid sequence set out in Fig. 12B under the control of the tipA promoter, whereby said vector is capable, after incorporation into *Streptomyces coelicolor*, of causing expression of AccB polypeptide having the amino acid sequence set out in Fig. 12A and/or the amino acid sequence encoded by the nucleic acid sequence set out in Fig. 12B.

18. The vector of claim 17, further comprising the nucleic acid sequence set out in Fig. 13B under the control of said tipA promoter, whereby said vector is capable, after incorporation into *Streptomyces coelicolor*, of causing expression of AccE polypeptide having the amino acid sequence set out in Fig. 13A and/or the amino acid sequence encoded by the nucleic acid sequence set out in Fig. 13B.

19. A *Streptomyces coelicolor* strain comprising the vector of claim 17.

5 20. A *Streptomyces coelicolor* strain comprising the vector of claim 18.

21. A method of producing a polyketide, the method comprising:

10 providing a polyketide-producing strain of *Streptomyces coelicolor* into which the vector of claim 17 has been introduced;

culturing said strain under conditions suitable for polyketide synthesis; and

15 extracting said polyketide from the cell culture medium.

22. The method of claim 21, further comprising the step of purifying said polyketide.

20 23. The method of claim 22, further comprising the step of formulating said polyketide as a pharmaceutical.

24. The method of claim 21 wherein said polyketide is an antibiotic.

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25. A method of producing a polyketide, the method comprising:

providing a polyketide-producing strain of *Streptomyces coelicolor* into which the vector of claim 18 has been introduced;

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culturing said strain under conditions suitable for polyketide synthesis; and

extracting said polyketide from the cell culture medium.

26. The method of claim 25, further comprising the step of purifying said polyketide.

5 27. The method of claim 26, further comprising the step of formulating said polyketide as a pharmaceutical.

28. The method of claim 27, wherein said polyketide is an antibiotic.

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29. A method of modifying a polyketide-producing strain of a *Streptomyces* species to increase production of said polyketide, the method comprising modifying said strain to express, or to increase expression of, nucleic acid according to claim 1.

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30. The method of claim 29, wherein said polyketide is an antibiotic.

20 31. The method of claim 29, wherein said *Streptomyces* species is selected from the group consisting of *S. coelicolor*, *S. violaceoruber*, *S. lividans* and *S. parvulus*.

32. The method of claim 31, wherein said strain is selected from the group consisting of ATCC 12434, ATCC 19832, *S. coelicolor* A3(2) and *S. lividans* 66.

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33. The method of claim 31, wherein said *Streptomyces* species is *S. coelicolor*.

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34. The method of claim 32, wherein said strain is *S. coelicolor* A3(2).

35. The method of claim 29, further comprising modifying said strain to express, or to increase expression of, nucleic acid according to claim 3.

5 36. The method of claim 29, further comprising modifying said strain to express, or to increase expression of, nucleic acid according to claim 5.

10 37. The method of claim 29, further comprising modifying said strain to express, or to increase expression of, nucleic acid according to claim 7.

15 38. A modified strain of a *Streptomyces* species, produced according to the method of claim 29.

39. A method of producing a polyketide, the method comprising:
providing the modified *Streptomyces* strain of claim 38;
culturing said strain under conditions suitable for
20 polyketide synthesis; and
extracting said polyketide from the cell culture medium.

40. The method of claim 39, further comprising the step of purifying said polyketide.

25 41. The method of claim 40, further comprising the step of formulating said polyketide as a pharmaceutical.

42. A method of increasing acetyl-CoA carboxylase (ACCase)
30 activity in a strain of *Streptomyces coelicolor*, the method comprising modifying said strain to express, or to increase expression of, nucleic acid encoding AccB polypeptide, said

nucleic acid having the nucleic acid sequence set out in Fig. 12B.

43. The method of claim 42, further comprising modifying said strain to express, or to increase expression of, nucleic acid encoding AccE polypeptide, said nucleic acid having the nucleic acid sequence set out in Fig. 13B.

44. The method of claim 42, further comprising modifying said strain to express, or to increase expression of, nucleic acid encoding AccA1 polypeptide, said nucleic acid having the nucleic acid sequence set out in Fig. 11B.

45. The method of claim 42, further comprising modifying said strain to express, or to increase expression of, nucleic acid encoding AccA2 polypeptide, said nucleic acid having the nucleic acid sequence set out in Fig. 11B.

46. The method of claim 42, wherein the strain is *S. coelicolor* A3(2).

47. A method of increasing production of a polyketide in *Streptomyces coelicolor*, the method comprising culturing said cells in the presence of exogenous malonate.

48. The method of claim 47, wherein the malonate is present at a concentration of at least about 0.1%.

49. The method of claim 48, wherein the malonate is present at a concentration of at least about 0.5%.

50. The method of claim 49, wherein the malonate is present at a concentration of at least about 1%.

51. The method of claim 47 wherein the polyketide is an antibiotic.

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